

WHAT IS CLAIMED IS:

1. A computer-implemented method for correcting a structured electronic
5 document, comprising:
 identifying a structural aspect of the structured electronic document that fails to
conform to rules of a markup language format, the rules being associated with the
structured electronic document;
 suggesting one or more changes to a user which would correct the identified
10 structural aspect;
 receiving user input selecting a change of the suggested changes; and
 applying the selected change to the structured electronic document.
2. The method of claim 1, wherein:
15 identifying a structural aspect of the structured electronic document includes
identifying a missing, extraneous, misplaced, or mismatched structural aspect of the
structured electronic document.
3. The method of claim 1, wherein:
20 the rules include one or more rules stored separately from and referred to in the
structured electronic document.
4. The method of claim 1, wherein:
the rules include one or more rules stored in the structured electronic document.
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5. The method of claim 1, wherein:
the rules include one or more rules deduced from the structure of the structured
electronic document.
- 30 6. The method of claim 1, wherein:
the markup language format is an XML format.

7. The method of claim 6, wherein:
the rules include one or more rules defined in an XML Schema.

5 8. The method of claim 6, wherein:
the rules include one or more rules defined in an XML DTD.

9. The method of claim 1, wherein:
suggesting changes to the user includes suggesting a plurality of changes to the
10 user in an order determined by predefined user preferences.

10. The method of claim 1, wherein:
suggesting changes to the user includes suggesting a plurality of changes to the
user in an order determined by a calculated statistical likelihood of correctness.

15 11. The method of claim 1, wherein suggesting one or more changes to a user
comprises:

requesting information from a user about the identified structural aspect; and
based on input received in response to the request, suggesting to the user one or
20 more changes that would correct the identified structural aspect.

12. The method of claim 1, wherein:
identifying a structural aspect of the structured electronic document that fails to
conform to rules associated with the structured electronic document includes identifying
25 one or more structural aspects of the structured electronic document that fail to conform
to rules associated with the document;

receiving user input selecting a change of the suggested changes includes
receiving user input selecting one or more suggested changes; and
applying the selected change includes applying the selected changes to
30 the structured electronic document, thereby bringing the entire structured electronic
document into conformance with the rules.

13. A computer-implemented method for validating and correcting a markup language document, comprising:

recursively validating a parent element of the markup language document by:

5 validating attributes of the parent element;

validating a content model of the parent element; and

recursively validating one or more children of the parent element;

identifying a structural aspect of the markup language document that fails to conform to rules associated with the markup language document;

10 suggesting one or more changes to a user that would correct the identified structural aspect;

receiving user input selecting a change of the suggested changes; and

applying the selected change to the document.

15 14. The method of claim 13, wherein:

the markup language document is an XML document.

15. The method of claim 14, further comprising:

20 checking a root element against a DOCTYPE root tag specified in the rules associated with the XML document; and

allowing a user to retag the root element using the DOCTYPE root tag.

16. A computer program product tangibly embodied in a machine-readable medium for correcting a structured electronic document, the product comprising
25 instructions operable to cause one or more data processing apparatus to perform operations comprising:

identifying a structural aspect of the structured electronic document that fails to conform to rules of a markup language format, the rules being associated with the structured electronic document;

30 suggesting one or more changes to a user which would correct the identified structural aspect;

receiving user input selecting a change of the suggested changes; and
applying the selected change to the structured electronic document.

17. The computer program product of claim 16, wherein:
5 identifying a structural aspect of the structured electronic document includes
identifying a missing, extraneous, misplaced, or mismatched structural aspect of the
structured electronic document.

18. The computer program product of claim 16, wherein:
10 the rules include one or more rules stored separately from and referred to in the
structured electronic document.

19. The computer program product of claim 16, wherein:
the rules include one or more rules stored in the structured electronic document.
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20. The computer program product of claim 16, wherein:
the rules include one or more rules deduced from the structure of the structured
electronic document.

20 21. The computer program product of claim 16, wherein:
the markup language format is an XML format.

22. The computer program product of claim 21, wherein:
the rules include one or more rules defined in an XML Schema.
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23. The computer program product of claim 21, wherein:
the rules include one or more rules defined in an XML DTD.

24. The computer program product of claim 16, wherein:
30 suggesting changes to the user includes suggesting a plurality of changes to the
user in an order determined by predefined user preferences.

25. The computer program product of claim 16, wherein:
suggesting changes to the user includes suggesting a plurality of changes to the
user in an order determined by a calculated statistical likelihood of correctness.

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26. The computer program product of claim 16, wherein suggesting one or
more changes to a user comprises:

requesting information from a user about the identified structural aspect; and
based on input received in response to the request, suggesting to the user one or
10 more changes that would correct the identified structural aspect.

27. The computer program product of claim 16, wherein:
identifying a structural aspect of the structured electronic document that fails to
conform to rules associated with the structured electronic document includes identifying
15 one or more structural aspects of the structured electronic document that fail to conform
to rules associated with the document;

receiving user input selecting a change of the suggested changes includes
receiving user input selecting one or more suggested changes; and
applying the selected change includes applying the selected changes to
20 the structured electronic document, thereby bringing the entire structured electronic
document into conformance with the rules.

28. A computer program product tangibly embodied in a machine-readable
medium for validating and correcting a markup language document, the product
25 comprising instructions operable to cause one or more data processing apparatus to
perform operations comprising:

recursively validating a parent element of the markup language document by:
validating attributes of the parent element;
validating a content model of the parent element; and
30 recursively validating one or more children of the parent element;

identifying a structural aspect of the markup language document that fails to conform to rules associated with the markup language document;

suggesting one or more changes to a user that would correct the identified structural aspect;

- 5 receiving user input selecting a change of the suggested changes; and
applying the selected change to the document.

29. The computer program product of claim 28, wherein:
the markup language document is an XML document.

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30. The computer program product of claim 29, further comprising
instructions operable to cause one or more data processing apparatus to perform
operations comprising:

- checking a root element against a DOCTYPE root tag specified in the rules
15 associated with the XML document; and
allowing a user to retag the root element using the DOCTYPE root tag.